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THE DAVEY ALMOND

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CALIFORNIA AGRICULTURAL
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Original tree of the Davey variety grown at the Wolf-skill Experimental Orchard at Winters, California. Upright habit of growth is characteristic of the tree shape.

Davey, a new variety of almond developed by the University of California and the United States Department of Agriculture, was released in 1952 for general propagation. Compared with varieties now being grown as pollinizers for Nonpareil—the most important commercial variety—Davey has a more satisfactory blooming period. In addition, it has shown good tree growth and nut characteristics and in preliminary trials good yields. It also appears to be more tolerant of mild salinity (sodium) than the Texas (Mission) variety.






Its blooming dates from 1948 through 1952, shown on the chart, are evidence of its suitability as a pollinizer for Nonpareil.

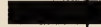




THE AUTHORS:



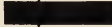


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APRIL, 1954

1948	JANUARY	FEBRUARY	MARCH
	15	15	15
Ne Plus Ultra		████████████████████	
Peerless		████████████████████	
Nonpareil		████████████████	
DAVEY		████████████████	
Texas (Mission)		████████████	

1949	JANUARY	FEBRUARY	MARCH
	15	15	15
Ne Plus Ultra			
Peerless			
Nonpareil			
DAVEY			
Texas (Mission)			

1950	JANUARY	FEBRUARY	MARCH
	15	15	15
Ne Plus Ultra			
Peerless			
Nonpareil			
DAVEY			
Texas (Mission)			

1951	JANUARY	FEBRUARY	MARCH
	15	15	15
Ne Plus Ultra			
Peerless			
Nonpareil			
DAVEY			
Texas (Mission)			

1952	JANUARY	FEBRUARY	MARCH
	15	15	15
Ne Plus Ultra			
Peerless			
Nonpareil			
DAVEY			
Texas (Mission)			

THE DAVEY ALMOND*

E. F. SERR · D. E. KESTER · M. N. WOOD · R. W. JONES

SINCE THE BEGINNING of almond culture in California more than one hundred different varieties have been grown on a commercial scale. This is evidence of the industry's constant search for better varieties. To aid in the improvement an almond-breeding program has been conducted jointly during the past thirty years by the United States Department of Agriculture and the University of California. The objectives of this program have included high nut quality, good yield, late blooming, disease-resistance, insect-resistance, ease of harvest, and interfertility with standard varieties. Development of other improved varieties is in progress.

CALIFORNIA ALMOND INDUSTRY

Nonpareil leading variety. Poor varieties have been discarded until at present approximately 95 per cent of the total California almond production is made up of seven varieties: Nonpareil, Texas (Mission), Ne Plus Ultra, Drake, IXL, Peerless, and Jordanolo. Of these, Nonpareil has proved to be the most generally satisfactory variety in meeting the requirements of grower, manufacturer, and consumer.

* Submitted for publication September 2, 1953.

Problem of cross-pollination. The fact that almonds are self-sterile makes necessary at least two varieties in an orchard to provide for cross-pollination of blossoms. Without a satisfactory pollinizer blooming at the same time as Nonpareil—a midseason blooming variety—the usual practice has been to plant two other varieties in the orchard as pollinizers—an early blooming variety (most commonly Jordanolo, Ne Plus Ultra, or Peerless) and a late blooming variety (usually Texas) in order to have sufficient overlapping of blooming periods. Early bloomers are subject to spring frost, rain, and disease damage. Of the late bloomers, Drake is subject to brown rot fungus attack and Texas is injured severely by mild soil salinity.

DAVEY PROMISING VARIETY

Meets pollinizing needs. The Davey, tested as California 3-3, has been one of the most promising in preliminary tests of seedlings from the breeding program. Because of the need for a better pollinizer for Nonpareil, and because of Davey's quality and other favorable characteristics it has been released for general propagation and commercial trial by growers. This is in line

Table 1. Comparison of time of bloom of the variety

Variety	Time of bloom			
	1948		1949	
	(First)	(Last)	(First)	(Last)
Ne Plus Ultra.....	Jan. 26	Feb. 26	Mar. 7	Mar. 18
Peerless.....	Jan. 30	Feb. 26	Mar. 7	Mar. 18
Nonpareil.....	Feb. 11	Mar. 1	Mar. 10	Mar. 21
Davey.....	Feb. 15	Mar. 1	Mar. 11	Mar. 21
Texas (Mission).....	Feb. 17	Mar. 2	Mar. 14	Mar. 22

with the policy of releasing early those varieties which promise improvement of the industry. In this way new varieties can be tried quickly on a widespread scale by interested growers with the result that improvement in commercial plantings can be more rapidly accomplished.

Origin of Davey. Davey resulted from a cross of the varieties Nonpareil and Sans Faute made in the spring of 1936 by Milo N. Wood. Seedlings of this cross were first grown in the University orchards at Davis, then in 1939 were moved to the Wolfskill Experimental Orchard near Winters. When the seedlings came into bearing, one tree designated as 3-3 was selected as outstanding. Since 1948 it has been under test in coöperation with the Agricultural Extension Service and growers in small coöperative plots located in the principal almond-producing counties of California.

Selection of name. The name Davey was chosen in memory of the late Arthur Ernest Davey, a member of the University of California Department of Pomology staff from 1936 to his death in 1947. He represented the University in the coöperative almond-breeding program during the period when the new variety now bearing his name was being tested and selected. The late Milo N. Wood, Pomologist, was the United States De-



Branch of Davey variety showing nut location.

partment of Agriculture representative. Dr. Davey and Mr. Wood were jointly responsible for early selection of the Davey variety as a promising prospect for commercial production.

TREE CHARACTERISTICS

Davey is a vigorous tree of upright habit, which can be pruned to desirable form for orchard operations.

Blooming time. At Winters, the blooming time of Davey is practically identical with that of Nonpareil—just after the middle of the blooming range of other commercial varieties. Comparison of time of bloom is shown in table 1. Hand-pollination tests have shown that Davey is a good pollinizer for Nonpareil

Davey with other commercial almond varieties at Winters

Time of bloom					
1950		1951		1952	
(First)	(Last)	(First)	(Last)	(First)	(Last)
Feb. 19	Mar. 3	Feb. 17	Feb. 26	Feb. 18	Feb. 27
Feb. 20	Mar. 4	Feb. 19	Mar. 7	Feb. 20	Feb. 29
Feb. 23	Mar. 5	Feb. 25	Mar. 11	Feb. 26	Mar. 1
Feb. 25	Mar. 7	Feb. 24	Mar. 9	Feb. 26	Mar. 2
Feb. 27	Mar. 8	Mar. 6	Mar. 13	Mar. 1	Mar. 7

and that Nonpareil is an effective pollinizer for Davey. Similarly, tests to date indicate that Davey is interfertile with the varieties Jordanolo, Ne Plus Ultra, Peerless, and Texas (Mission), although blooming dates of these varieties do not overlap those of Davey as well as do the blooming dates of Nonpareil. The original Davey tree at Winters has borne consistently good crops.

Susceptibility to bud failure. Up to this time none of the disorders known as "bud failure," "crazy top," or "mule tail" has been identified in trees of the Davey variety, although this variety has not been tested long enough to be sure of its immunity from such troubles.

Mild salinity tolerance. In preliminary tests up to the present time, Davey has shown very little sodium injury in

soils where the Texas (Mission) variety is severely damaged.

NUT CHARACTERISTICS

Type and quality. Nuts of the Davey variety mature early—about the same time as Nonpareil. They are relatively easy to knock and hull. They classify as "soft shell" with kernel content averaging about 55 per cent by weight in test lots cracked over the past ten years. The percentage of nuts with double kernels has been low.

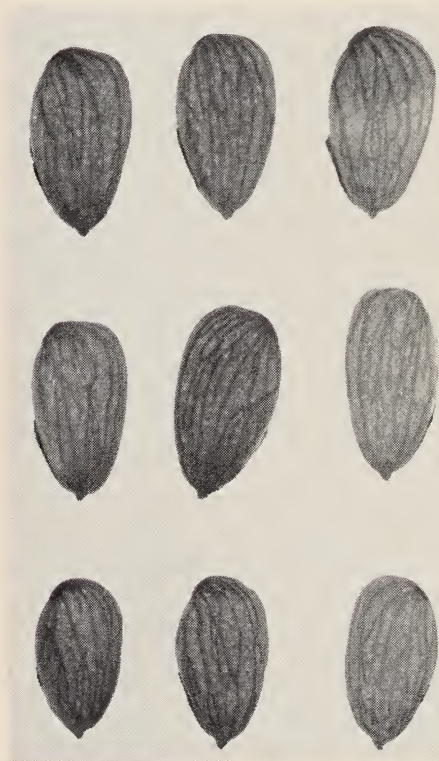
It is believed the nuts will have good market quality for sale both as kernels and in the shell. The nut has some of the good qualities of several standard varieties, including Nonpareil, IXL, and Drake and is believed suitable for many of the same uses as these varieties. However, it is not identical with any of them and should be kept separate in harvesting.

Appearance of shells and kernels. The nuts as grown at Winters usually have attractive, light-colored, smooth, thin, well-sealed shells. They have been suitable for sale in the shell most years, although in some years at Winters the shell has been somewhat rough and less attractive than usual.

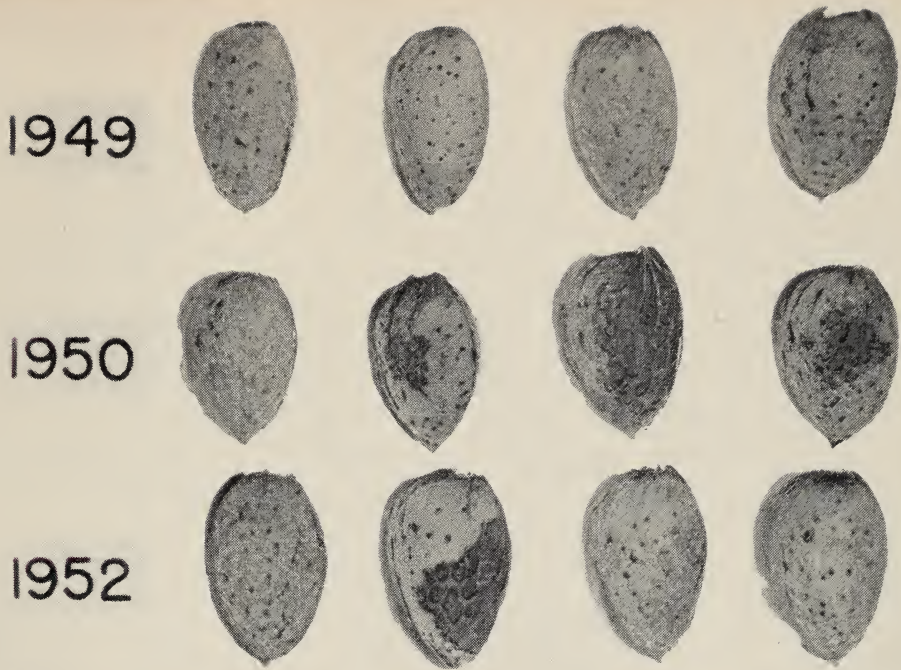
The kernels are medium sized, light colored, smooth, attractive, and of good texture and flavor. They are quite similar in shape to Nonpareil kernels but usually somewhat thicker and more wedge shaped. Blanching quality is considered good, intermediate between that of Nonpareil and IXL varieties.

AVAILABILITY OF GRAFTING WOOD AND BUDWOOD

Grafting wood and budwood have been available to propagators since the spring of 1953. Most of the supply has been from young trees in grower-coöperative test plots in the following counties: Tehama, Glenn, Colusa, Butte, Sutter, Solano, San Joaquin, Stanislaus, Merced, Monterey, and San Luis Obispo.



Comparing kernels of Davey variety (upper two rows) with those of Nonpareil. Note similarity in size and appearance. Davey, however, tends to be thicker and more wedge shaped.



Nuts of the Davey variety collected in different years. Variation in the smoothness of the outside shell from one year to another is a characteristic of the variety.

Distributing agencies. The distribution of grafting wood from test plots is being handled by grower-coöperators and the Farm Advisors of the counties listed. Nurserymen or growers wishing to secure a small amount of scion wood or budwood should consult one of the

three following agencies: Agricultural Extension Service (Farm Advisor); Department of Pomology, University of California, Davis; or United States Horticultural Field Station, Fresno. Several nurserymen are now propagating Davey on a commercial scale.

HORTICULTURAL DESCRIPTION

TREE: Large, very vigorous, and upright. **Trunk** not especially thick for size and spread of tree. **Main branches** grow long and upright showing only slight early tendency to bend, but spreading out toward top, eventually resulting in an open tree with widely separated branches. **Main crotch angles** usually narrow. **Small lateral branches** arise from older wood at wide angle, bear spur wood, tend to be more flexible than current year's growth at terminal. **Terminal growth of shoots** usually long and upright with relatively long internodes and few laterals.

BARK: **Large limbs and trunk** dark gray with reddish tinge to dark brownish gray. Bark of larger limbs and trunk on older trees roughened by network of longitudinal fissures.

Lenticels very large and prominent, elongated transversely, long elliptical in shape and may be as large as 1 inch in length and $\frac{3}{8}$ inch in width on large branches of old trees. **Vigorous, nonfruiting shoot growth two to three years old** reddish color with netted longitudinal cracking which imparts silvery cast to bark; lenticels readily observed. **More slowly growing fruiting branches** darker in color and show no reddening of bark, being gray to dark brown. Cracking of bark present on these branches but not prominent; lenticels present, but not distinct. **Current year's wood** light green, darkening to reddish brown in spots or in streaks along one side of twig, finally completely browning; with colder temperatures of fall, red color develops in past

season's growth; lenticels, readily observed with magnification, are numerous, small, white, slightly raised, and pointed.

BEARING HABIT: Nuts on mature trees borne on short twigs or spurs, usually scattered, not in clusters.

FOLIAGE: Relatively sparse, similar to Nonpareil. **Size of leaves** medium to small, but larger on vigorous shoots, smaller on spurs and lateral growth. Size of normal leaf blades varies from $2\frac{3}{4} \times \frac{5}{8}$ inches to $1 \times \frac{3}{8}$ inch, giving a ratio of length to width of 3:1. Petioles vary from $1\frac{1}{8}$ inches to $\frac{1}{4}$ inch long. **Petiole** fairly slender, grooved. On very vigorous terminal or sucker growth, leaf size may be larger and shape somewhat altered. **Color of leaf** medium dull green with silvery bloom, slightly more pronounced on under surface. **Leaf shape** elongated ovate to elongated elliptical. **Leaf margin** finely serrate. **Midrib** prominent. **Glands** small, globose, two to four in number, borne at base of blade or slightly below on petiole.

BUDS: Terminal. Broadly conic; dark brown; bud scales are glabrous except for pubescence on margins; buds small, plump. **Axillary.** Same approximate size, shape, and color, but flattened tangentially.

FLOWERS: Size medium, approximately $1\frac{3}{8}$ inches wide at full bloom. **Pedicel** short, glabrous. **Calyx** cup shaped; dorsal surface red, changing to green on basal portion and where protected; outside surface glabrous, irregular, quite rough and wrinkled; gray pubescence at bottom of calyx cup. **Nectaries** bright orange. **Sepals** small, widest at base tapering to obtuse apex; dorsal color variable red to green, with prominent midvein; ventral surface greenish changing to red at base; pubescent at margins. **Petals** medium sized, $\frac{1}{2}$ to $\frac{5}{8}$ inch long and $\frac{3}{8}$ to $\frac{1}{2}$ inch broad; shape, roundish to broad oval; irregular wavy margins; apex usually emarginate; base wedge shaped; space at base showing sepals; very light pink fading to white with age; red color at base persists. **Stamens** approximately two thirds

petal length; variable in length; filaments light pink but with age deepening to red at base; 28 to 30; anthers yellow, versatile. **Pistil** length approximately equal to stamens; pubescence on ovary to two thirds length of style; upper end of style usually curled.

IMMATURE FRUIT: Size medium and rather uniform, plump. **Shape** broadly ovate. **Side view** broadly ovate; dorsal edge curved to rounded; ventral edge much less curved, more acute. At apex both edges tend to be acute. Apex slightly rounded with short, sharp point. Base broad. **Upon drying of green fruit** ventral edge becomes evident. **Outer surface** light green with abundant pubescence of short, fine hairs. **Dehiscence** along ventral edge.

HULLED NUT: Size medium, similar to Nonpareil. **Shape** moderately plump, broadly ovate. **Side view** oval to elliptical. Axis one third way from dorsal to ventral edge. Ventral edge much curved. Wing thin, prominent, extending entire length of ventral side. Dorsal edge slightly curved, with slight ridge on edge. Stem scar prominent, elongated laterally on truncated base at right angles to axis. Apex broadly tapering with short, sharp point. **Shell** classified as soft. Outer shell soft and may be intact or crumbling, depending on season and area. Color light. Pits distinct, medium in size and number, varying in depth; tend to be rounded. Fibers coarse, prominent. Canal oval, medium to large. Inner shell medium thick, hard, light brown on inner surface. Ventral streak prominent, wide, light brown. **Kernel**, doubles few. Size medium. Shape ovate, broadest at base. Side view long oval. Ventral edge slightly more curved than dorsal edge. Base of kernel truncate. Base scar brown, oval, medium to large, located at point of greatest curvature on dorsal shoulder. Apex broadly tapering with prominent short tip. **Pellicle** light golden brown but often with lighter areas distributed over the surface. Veins somewhat darker and slightly sunken. No pubescence except small amount near apex.